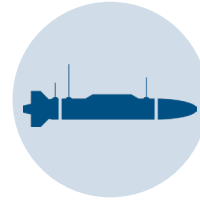
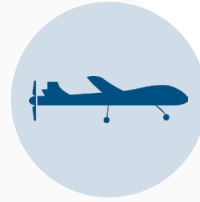


HARAKAN-F



VPX Rugged Compact Mission Computer

- ▶ SWaP (Size, Weight and Power) - Optimized embedded computer
- ▶ Up to two 3U VPX plug-in cards
- ▶ Fanless conduction-cooled, designed for harsh environments
- ▶ Latest silicon gen Intel® Core™ or Intel® Xeon® D CPUs
- ▶ Versatile configurations: CPU, (GP)GPU, Switch, FPGA, i/Os
- ▶ Qualified for extreme temperatures, shock, vibration, high altitudes, voltage spikes and more
- ▶ ITAR / BAFA Free

A rugged high-performance and flexible computer for modern defense computing applications: Vetronics, CSISR, Electronic Warfare, Autonomous System, Artificial Intelligence.

Kontron HARAKAN-F is a pre-integrated and pre-validated mission computer system, reducing cost, risk, and time to market. Typical applications for the HARAKAN-F system include mission computing, vetronics, software defined radio, video capture, AI vision processing, rugged firewall, network gateway and electronic warfare.

Equipped with the latest generations of processors, the Kontron HARAKAN-F flexible and rugged processing system provides the highest functional density available in a small package. This conduction-cooled rugged embedded system is designed for reliable operations in harsh environments without the need of forced-air cooling.

Leveraging on Kontron's 3U VPX plug-in cards product catalog, the Kontron HARAKAN-F offers a wide range of configurations in terms of functionality, performance and I/Os.

The rugged integrated mission processing system offers two 3U VPX slots, thus enabling several custom configurations: one or two Single Board Computer(s) (SBC), optional (GP)GPU board, and switch board...

This approach using 3U VPX plug-in cards aligned to Sensor Open Systems Architecture (SOSA) Technical Standard allows our customers to build solutions aligned with Modular Open Systems Approach (MOSA) requirements, ensuring interoperability, maintainability and scalability at systems level.

This MOSA approach integrates technical requirements to support a more rapid evolution of capabilities and technologies throughout the product life cycle via the use of architecture modularity, open systems standards, and appropriate business practices. Ultimately, the aim is to provide the following benefits:

- Reducing costs and timelines for designing a modified Commercial Off-The-Shelf (COTS) product
- Schedule reduction and rapid deployment for the introduction of new technology or technical upgrades and refreshes.
- Interoperability, including system of systems interoperability and mission integration

By choosing HARAKAN-F for their most demanding applications, our customers benefit from the latest technology available on the market, while having the option of refreshing their systems mid-program.

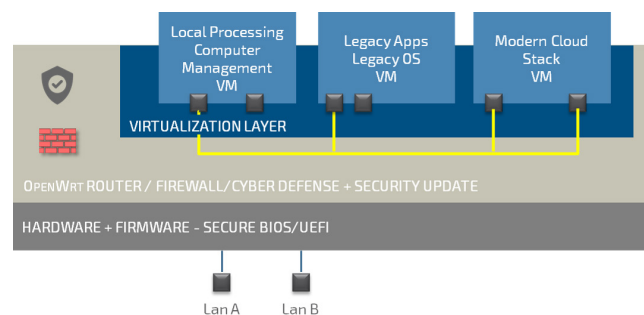
Designed and manufactured in Europe, Kontron HARAKAN-F is ITAR and BAFA free.

Kontron Edge Computing solution

Additionally, through its Sec-line platform embedded on the HARAKAN, Kontron doesn't just provide a hardware solution; it also introduces a micro-cloud concept that transforms the world of embedded software and networking with virtualization coming to the FAR edge. The HARAKAN embedded with the Kontron Sec-Line platform emerges as a flexible and secure platform capable of integrating numerous software within a single device using virtual machines. This micro-cloud enables the independent operation of software stacks securely within each virtual machine, facilitating the coexistence of outdated and insecure software alongside modern orchestrator-driven payloads and software-defined networking.

Learn more on the Kontron website:

<https://www.kontron.com/en/products/sec-line-platform/p160632>



Moreover, all Kontron single board computer plug-in cards integrate security elements enabling Hardware root-of-trust (Kontron SEC-Line Element), at a time when cybersecurity is becoming a major issue for critical solution. Features like TRUSTED BOOT and SECURE BOOT safeguard the system software during boot-up, detecting any alterations by verifying the signed software and scrutinizing the footprint of code fragments loaded during the boot process. The AUTHENTICATION WITH TPM feature authenticates the system hardware during communication phases (SSL/TLS), facilitating the use of secure network protocols with SSL/TLS certificates sealed by the TPM.

Learn more on the Kontron website:

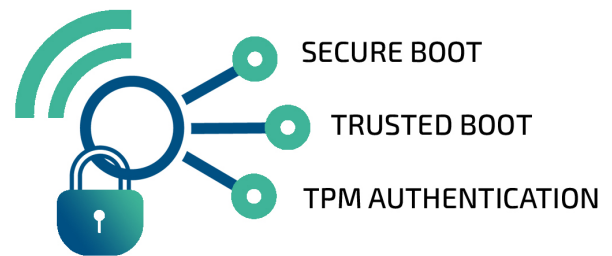
<https://www.kontron.com/en/products/sec-line-elements/p148947>

Kontron also offers health-monitoring tools at the hardware level: Kontron CMON-Line is a turnkey, extensible and data centric solution for local or remote computer health monitoring. It complements Kontron's Power-On Built In Test (PBIT) which signals any modification made to the computer by comparing against previous computer configuration recording.

Learn more on the Kontron website:

<https://www.kontron.com/en/products/cmon-line/p150265>

For enhanced cyber security measures, Kontron could provide a sanitization solution upon request. This solution will operate on the premise of purging sensitive contents from all user-accessible non-volatile memories by restoring them to their original factory-state data. The process involves not only overwriting the logical storage locations of files but also encompasses all user-accessible areas. This aligns with the 'clear' method outlined in the NIST SP 800-88 standard.



Kontron solid support throughout product life cycle

Kontron HARAKAN is available in production for a minimum of 10 years. Beyond the end-of-life date, dedicated Long Term Services are available to guarantee procurement, inform of significant evolutions of monitored frozen configurations, and propose best strategies to protect the future.

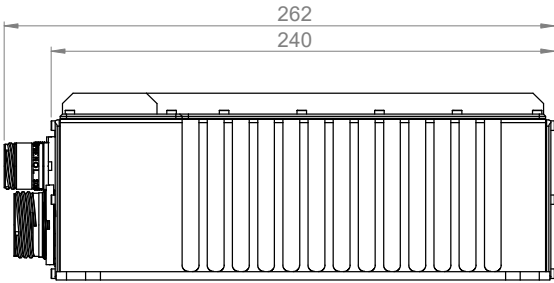
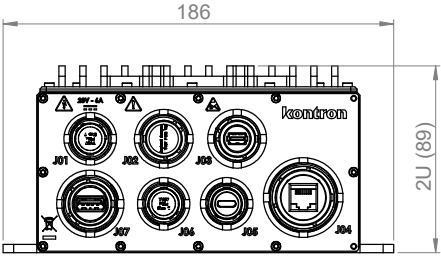
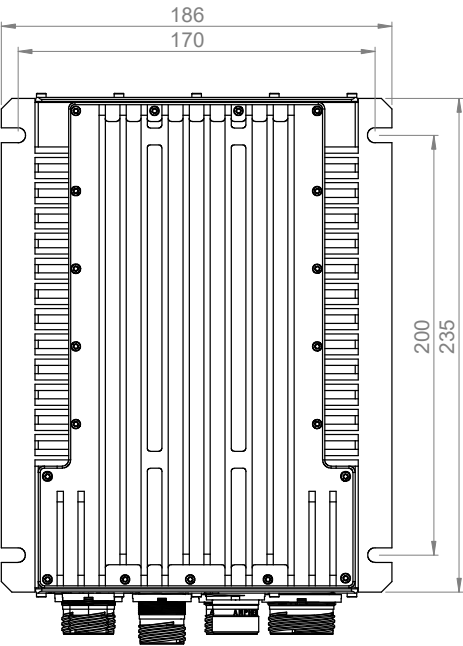
It is possible to extend the standard 2-year warranty of the Kontron HARAKAN-F by one, two or three extra years, for a maximum total of 5 years.

By choosing Kontron, our customers also enjoy the support of a local technical support team fully dedicated to answering to technical questions and issues.

Deploying with Kontron HARAKAN-F is a safe way to support a vast choice of modern defense applications and serve demanding new programs for the next decades, optimizing development efforts and long-term logistics.

CENTRAL PROCESSING UNIT	4-CORE I7	Intel® Core™ i7-1185GRE, 12-28W TDP, Quad-Core @1,8GHz Base frequency, configurable up to 2.8GHz
(GP)GPU	INTEGRATED GPU NVIDIA OPTION	Intel® Iris® Xe Graphics GPU, 32EUs NVIDIA RTX™ 2000 Ada GPU with 3072 CUDA Cores, 96 Tensor Cores, 24 RT Cores
MEMORY	RAM	32GB DDR4 soldered with ECC
STORAGE	SATA SSD NVME OPTION	Internal 256GB (Disk with AES-256 HW Encryption on request) Up to 16TB nVME SSD
DEFAULT I/OS	ETHERNET USB SERIAL GPIO VIDEO OUTPUT	1x 10/100/1000Base-T 1x USB3.0 + 1x USB2.0 2x RS232 or 1x 422/485, full duplex, configurable 1x Maintenance simplified serial port RS232 4x configurable GPIO 1x DP++ (only with Core i7 CPU)
OPTIONAL I/OS (CONTACT US)	ETHERNET VIDEO INPUTS VIDEO OUTPUTS	Up to 4x additional 10/100/1000Base-T, Up to 2x optical 10GBase-SR 2x 12G-SDI/ARINC 818 or 4x 3G-SDI/ARINC 818 4x 12G-SDI or 4x 3G-SDI or 4x ARINC 818 DP/DVI/HDMI output
SUPPORTED OS	BSP HYPERVISOR	Linux 64 bits (default), Windows 10 IoT (on-request) Kontron Sec-Line platform hardened openWRT hypervisor (on request)
DIMENSIONS	W x D x H	159 x 240 x 89 mm (6.26 x 9.45 x 3.5 inch)
MECHANICAL	IP LEVEL COOLING METHOD WEIGHT	IP65 (contact us for IP67) Conduction cooled (thru Cold Plate) or/and Natural convection 3,9 kg (8.6 lbs)
OTHER FEATURES	RTC SECURE ELEMENT	Battery for RTC (on-request) TPM 2.0
POWER SUPPLY UNIT	DC-DC	Wide range 18-36VDC, MIL-STD1275E compliant
TEMPERATURE RANGE	OPERATING STORAGE	-40 °C to +71 °C (depending on configuration) -40 °C to +85 °C
CERTIFICATIONS	THERM / MECH EMC/EMI OTHERS	MIL-STD810 MIL-STD461 CE, REACH / RoHS

A typical configuration is listed as reference. Different configurations might be possible depending on your program-specific requirements, please contact sales.KFR@kontron.com



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